Paper #2: Middle School Mathematics PD Study: Description of the PD Intervention

Authors: Kirk Walters*, Michael Garet, Steve Leinwand

*Presenter

Background/context: (See paper 1 in this symposium)

Purpose / objective / research question / focus of study: (See paper 1 in this symposium)

Setting / Population / Participants / Subjects: (See paper 1 in this symposium)

Intervention / Program / Practice:

This paper describes the PD program that was delivered during the first year of the study. The main goal of the intervention was to increase teachers' capability to teach positive rational number topics effectively. The program included a 3-day summer institute (18 hours per teacher), five 1-day seminars held during the school year (30 hours per teacher), and 10 days of intensive in-school coaching (20 hours per teacher), providing a total intended dosage that is significantly higher than the dosage of content-focused PD most mathematics teachers typically receive in a single year (Birman et. al, 2007).

Within the domain of rational numbers, the program design focused on fractions, decimals, ratio, rate, proportion, and percent. Across the 8 institute and seminar days, the program was designed to provide equal coverage to fractions and decimals (4 days) and ratio, rate, proportion, and percent (4 days). For each rational number topic area, the PD program was designed to address both common knowledge of mathematics and specialized knowledge of mathematics for teaching.

Two providers selected through a competitive process delivered the PD program. The study design required both PD providers to deliver the same intended dosage and to adhere to a common set of objectives, rational number topics, and PD features, described in more detail below. But because the providers built on their existing materials addressing topics in rational numbers, the providers differed in how they planned to structure teacher learning activities and present the content to teachers.

The summer institute and seminars blended activities intended to develop specialized knowledge of mathematics for teaching and strengthen common knowledge of mathematics. To address the common knowledge goals, the program design emphasized using precise definitions and explicated the properties and rationales underlying common procedures used with rational numbers. To address the specialized knowledge goals, the PD emphasized developing teachers' explanations of rational number concepts and procedures, identifying and addressing persistent student misconceptions, and using representations of rational number concepts in teaching. The

design called for modeling and practicing relevant pedagogical techniques as a means to develop teachers' skills in implementing specific mathematics teaching strategies.

The primary purpose of the coaching component of the PD program was to help teachers apply material covered in the institutes and seminars to their classroom instruction. The coaching component was designed to consist of 10 days of coaching provided through 5 two-day visits to each school. Each two-day coaching visit was intended to immediately follow one of the five seminar days and to link to the preceding seminar. Both providers used their districts' curricular pacing guides to schedule coaching visits when teachers planned to teach rational number topics.

Research Design: (See paper 1 in this symposium)

Data Collection and Analysis: (See paper 1 in this symposium)

Findings / Results: (See paper 3 in this symposium)

Conclusions: (See paper 3 in this symposium)